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Wed Nov 8 10:39:48 2000
Cambridge Scientific Abstracts
Database: Ceramic Abstracts/World Ceramics Abstracts
Query: KW=(Aluminum Titanate)
Your Comments:

Record 1 of 129

TI: Title
Ceramic bodies based on aluminum titanate
AU: Author
Gugel, E; Schuster, P
SO: Source
Tonind.-Ztg. Keram. Rundsch., 98 (12): 315-18, 1974
AB: Abstract
A review of the crystal chemistry and properties of tialite (Al sub 2 O sub 3, TiO sub 2; beta approaches alpha-form at 1800 degrees C) refers especially to the large anisotropy in its thermal expansion, -2.5-, 11-, and 19 multiplied by 10 sup -6 for the a, b, and c axes, avg 9-10 multiplied by 10 sup -6. The measured expansion of a polycrystalline fired specimen, however, is only 0.5-5 multiplied by 10 sup -6. This difference is explained by the fact that during the cooling of the specimen, the expansion anisotropy causes microcracking (electron microscope) and when the specimen is reheated to measure expansion, the microcracks provide spaces which accommodate some of the expansion and cause hysteresis in the heating and cooling curves. These tialite bodies have no technical value because of their porosity and low mechanical strength. The addition of 15% ZrSiO sub 4 stabilized the alpha-form and, depending on the firing schedule (1450-1700 degrees), gave a body with cone refractoriness of 34, expansion approximately 2 multiplied by 10 sup -6, high strength (30 N/mm sup 2), and a thermal shock resistance better than that of cordierite bodies. Although the body has microcracks (porosity), it may have value as a refractory. Moreover, it may be useful as a binder for SiC bricks to be used in blast furnaces, and also as an additive in stoneware to improve the resistance to alkaline solutions.
PY: Publication Year
1974
PT: Publication Type
Journal
CL: Classification
Refractories
SF: Subfile

Ceramic Abstracts
AN: Accession Number
CA5506575

Record 2 of 129

TI: Title
Aluminum titanate ceramics
SO: Source
Taikabutsu, 27 (215): 520-27, 1975
AB: Abstract
Melting point, low thermal expansion, decomposition, etc. at 1500 degrees C are discussed. ZnO sub 2 and MgO dissolved in Al sub 2 O sub 3 multiplied by TiO sub 2 up to 2.5% and 1.5-2.0%, resp. Addition of ZnO sub 2, MgO, and SiO sub 2, increased strength.
PY: Publication Year
1975
PT: Publication Type
Journal
CL: Classification
Refractories
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA5605630

Record 3 of 129

TI: Title
Aluminum titanate composition being stable at high temperature
SO: Source
Great Britain Patent 1543492
NT: Notes
Patent date: 4 Apr 1979
AP: Patent Applicant
Asahi Glass Co., Ltd.
PN: Patent Number
1543492
PY: Publication Year
1979
PT: Publication Type
Patent
PC: Patent Country
Great Britain
DE: Descriptors
electronics
CL: Classification
Electronics
SF: Subfile
Ceramic Abstracts

AN: Accession Number
CA5900580

Record 4 of 129

TI: Title
Aluminum titanate-mullite ceramic articles
SO: Source
US Patent 4483944
NT: Notes
Patent date: 20 Nov 1984
IN: Inventor
Day, John P; Lachman, Irwin M
AP: Patent Applicant
Corning Glass Works
PN: Patent Number
4483944
LA: Language
English
PY: Publication Year
1984
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
engineering materials; refractories; aluminum
CL: Classification
Refractories
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6402235

Record 5 of 129

TI: Title
Improvement of aluminum titanate ceramic
SO: Source
Sprechsaal, 118 [12] 1157-66, 1985
AB: Abstract
The review concerns the manufacture, properties, stabilization, and uses of AlTiO sub 3 ceramic. 89 refs.
LA: Language
German
PY: Publication Year
1985
PT: Publication Type
Journal
DE: Descriptors

general; titanates; materials, engineering
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6606517

Record 6 of 129

TI: Title
Mechanism for increasing the strength of technical ceramics due to eutectoid disintegration of aluminum titanate
AU: Author
Shevchenko, VYa; Dabizha, AA; Dabizha, NA
SO: Source
Journal of the Australian Ceramic Society, 24 [2] 123-5, 1988
AB: Abstract
Strengths of Al sub 2 O sub 3 -TiO sub 2 ceramics with 20- 45 wt% TiO sub 2 increase < or = 6.5 times by annealing at 1100 degrees C. Heat treatment results in eutectoid decomposition.
LA: Language
English
PY: Publication Year
1988
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; annealing; strengthening; decomposition; microcracking; titanates; strength; materials, engineering
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6907981

Record 9 of 129

TI: Title
Aluminum titanate--a literature review: II, Engineering properties and thermal stability
AU: Author
Thomas, HAJ
SO: Source
British Ceramic Transactions and Journal, 88 [5] 184-90, 1989
AB: Abstract
Title describes article content. 33 refs.
LA: Language
English

PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; physicomechanical properties; thermal properties; stability; strength; titanates; materials, engineering
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7006754

Record 10 of 129

TI: Title
Aluminum titanate--a literature review: III, Preparation of powders
AU: Author
Thomas, HAJ
SO: Source
British Ceramic Transactions and Journal, 88 [6] 229-33, 1989
AB: Abstract
Title describes article content. For part II#1, see Ceram. Abstr.#1, 1991#1, 70 [5-6] 70-06754A.
LA: Language
English
PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; powders; processing; analysis; titanates; powders
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7011660

Record 12 of 129

TI: Title
Decomposition of aluminum titanate solid solutions
AU: Author
Day, John P; Locker, Robert J
SO: Source
EnviCeram '88 (Special edition of CFI, Ceramic Forum

International), 4 [2] 127-42, 1989
AB: Abstract
(Special edition of FI, Ceramic Forum International#1) Max decomposition rate occurs at R1200#+C. Of the 13 materials tested as stabilizers, only Fe and Mg have a positive effect and Fe#72O#73 is the only true stabilizer of Al#72TiO#75 up to 1000 h of exposure over the entire temp. range. (meeting proceedings)
LA: Language
English
PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; decomposition; stabilization; iron oxides; solutions, solid; titanates; decomposition
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7004124

Record 14 of 129

TI: Title
Joining of aluminum titanate with niobium [by hot pressing]
AU: Author
Wohlfromm, H; Pena, Pilar; Moya, Jose S
SO: Source
Euro-Ceramics, 3pp. 3.429-35, 1989
AB: Abstract
Several reactions take place during bonding involving partial decomposition of Al titanate and formation of Nb oxides. Bonding conditions have to be chosen in a way that prevents formation of Nb#72O#75, which is detrimental to bonding strength. (meeting proceedings)
LA: Language
English
PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; niobium; joints; reactions; bonding; joining; nitrides; niobium
CL: Classification
Ceramic-metal systems
SF: Subfile
Ceramic Abstracts

AN: Accession Number
CA7010346

Record 15 of 129

TI: Title
Microstructure development during the reaction sintering of alumina and titania to produce aluminum titanate
AU: Author
Thomas, HAJ
SO: Source
British Ceramic Proceedings, [No. 42] pp. 117-22, 1989
AB: Abstract
Sintering dilatometry together with optical and electron microscopy characterize microstructures and follow progress of the reaction process. Particular microstructural features are associated with the reaction to form Al titanate.
LA: Language
English
PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; microstructure; sintering; reactions; microscopy; titanates; sintering; structure, micro-
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7004213

Record 16 of 129

TI: Title
Reaction-sintered aluminum titanate
AU: Author
Perera, DS
SO: Source
Journal of Materials Science, Lett., 8 [9] 1057-9, 1989
AB: Abstract
Mixtures were formed by adding 2 wt% BaO, Li#72O, SnO#72, or Na#72O to equimolar mixtures of Al#72O#73 and TiO#72. Specimens were sintered in air at 1400#+C for 4 h. Variable amounts of Al#72TiO#75 were formed.
LA: Language
English
PY: Publication Year
1989

PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; additives; preparation; sintering; titanates; sintering
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7004257

Record 17 of 129

TI: Title
Strengthening of aluminum titanate by addition of zirconia and zirconium silicate
AU: Author
Pandolfelli, Victor C; Nettleship, I
SO: Source
British Ceramic Proceedings, [No. 42] pp. 109-15, 1989
AB: Abstract
Zr silicate and ZrO#72 additions improve mechanical properties while retaining good thermal properties of Al titanate. When sintered at 1500#+C, the composition doped with Zr silicate shows no decrease in strength even after 25 thermal cycles. Zr silicate also improves b-Al#72TiO#75 phase stability in samples aged for 168 h at 900#+. Glass phase at grain boundaries of the sample containing zircon indicates that improvement of final density is due to a liquid phase sintering mechanism.
LA: Language
English
PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; additives; zirconium; mechanical properties; sintering; titanates; strengthening; additives
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7004280

Record 18 of 129

TI: Title
Thermomechanical properties of aluminum titanate ceramic between

20 and 1000#+#3C
AU: Author
Freudenberg, B; Lindner, H-A
SO: Source
Euro-Ceramics, 2pp. 2.64-71, 1989
AB: Abstract
Several properties show hysteresis effects under thermal or mechanical cyclic load, a phenomenon attributed to the opening and closing of microcracks. Based on these data, the shrinkage stress acting on the port liner tube in a cast iron matrix is calculated. Analysis shows Al titanate can withstand the compressive stresses. (meeting proceedings)
LA: Language
English
PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; hysteresis; shrinkage; stress; microcracking; titanates; mechanical properties
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7009338

Record 19 of 129

TI: Title
Al sub 2 TiO sub 5 -ZrTiO sub 4 -ZrO sub 2 composites--a new family of low-thermal-expansion ceramics
AU: Author
Parker, Fred J
SO: Source
Journal of the American Ceramic Society, 73 [4] 929-32, 1990
AB: Abstract
These compositions give avg thermal expansions (alpha sub / 24-1000 degrees C/) as low as - 2 multiplied by 10- sup 6 degrees - sup 1 and excellent high-temp. stability. The low thermal expansion results by microcracking by the titanate phases and a contractive phase transformation by the ZrO sub 2 . Crystal chemistry and microstructure depend on processing. Although the composites represent a complex microcracking system, the above properties make them potential candidates for applications requiring thermal shock resistance.
LA: Language
English
PY: Publication Year

1990
PT: Publication Type
Journal
DE: Descriptors
composites; thermal expansion; zirconia; solid solutions; aluminum titanate; composites; expansion
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6905776

Record 20 of 129

TI: Title
Aluminium titanate formation by solid-state reaction of Al sub 2 O sub 3 and TiO sub 2 single crystals
AU: Author
Freudenberg, B; Mocellin, A
SO: Source
Journal of Materials Science, 25 [8] 3701-8, 1990
AB: Abstract
Al sub 2 O sub 3 and TiO sub 2 reaction couples are prepared from polished prisms of sapphire and rutile single crystals with both c-axes normal to the common interface. Microstructures are analyzed after heat treatments in O sub 2 at 1690 and 1780 K, sometimes with a superimposed 20 K temp. difference across the rutile. Quantitative evaluation of the growth kinetics provides self-consistent estimates of effective diffusivities along the TiO sub 2 c-axis and across the titanate layer.
LA: Language
English
PY: Publication Year
1990
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; formation; solid state; reactions; single crystals
CL: Classification
Microstructure and characterization
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7103143

Record 21 of 129

TI: Title

Aluminum titanate ceramic sintered body
SO: Source
US Patent 5008222
NT: Notes
Patent date: 16 Apr 1991
AP: Patent Applicant
Toshiba Corp.
PN: Patent Number
5008222
LA: Language
English
PY: Publication Year
1990
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
aluminum titanate; magnesia; silica; titanates; sintering
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7011831

Record 22 of 129

TI: Title
Corrosion of aluminum titanate ceramics in molten aluminum
SO: Source
Report of the Research Laboratory of Engineering Materials, Tokyo Institute of Technology, 15pp. 67-74, 1990
AB: Abstract
Al titanate is corroded by molten Al at 1000 degrees C in Ar atm. Ti ion in Al titanate is reduced by molten Al to metallic Ti and the Ti dissolves into molten Al. The reaction leaves corundum and Al in the reaction layer. This reaction is accompanied with a vol decrease of solid phases, which changes specimen size and the porous reaction layer of the product. The thickness of reaction layer is influenced by firing temp., not additives in the ceramics. Grain-boundary cracks lower corrosion resistance.
LA: Language
English
PY: Publication Year
1990
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; aluminum; corrosion resistance; corundum;

reactions; corrosion; titanates; aluminum
CL: Classification
Oxidation and corrosion
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7109401

Record 24 of 129

TI: Title
Engine cylinder head with precombustion chambers using ceramic insert
SO: Source
US Patent 4899707
NT: Notes
Patent date: 13 Feb 1990
AP: Patent Applicant
NGK Spark Plug Co., Ltd.
PN: Patent Number
4899707
LA: Language
English
PY: Publication Year
1990
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
heat engine ceramics; cylinders; combustion; aluminum titanate; cordierite; materials, engineering; heat
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6908060

Record 27 of 129

TI: Title
Aluminum titanate powder synthesis via thermal decomposition of transparent gels
AU: Author
Mani, Themanam Veettil; Varma, Harikrishna; Warrier, Krishna G
SO: Source
Journal of the American Ceramic Society, 74 [8] 1807-10, 1991
AB: Abstract
The TGA curve of AlTiO#73 precursor gel is characterized by a

decomposition temp. extending up to 800#+C while the constituent gels of boehmite and hydrous TiO#72 independently decompose at lower temp. The gel stays in the amorphous state up to 800#+, as revealed from XRD. Sintered AlTiO#73 grains with sizes F2 mm are cracked while smaller ones are intact. When heated for a period of 2 h, the gel decomposes to powders with avg particle sizes of 2.7 mm at 900#+ and 6.5 mm at 1400#+.
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; gels; thermal decomposition; particle size; powders; titanates; powders; synthesis
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7009126

Record 28 of 129

TI: Title
Aluminum titanate preparation from nonreactive alumina
AU: Author
Aliprandi, G; Battilana, G; Nanni, R
SO: Source
Materials Science Monographs, 66 [B] 775-84, 1991
AB: Abstract
The reaction for AlTiO sub 5 formation is studied starting from commercial sandy Al sub 2 O sub 3 and rutile. Particle size distribution is determined. Firing is carried out for 10 h at 1450 degrees C. The effect of different firing atms is evaluated. Influences of operational parameters are discussed and final product chemical characteristics verified. (meeting proceedings)
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; alumina; reactions; preparation; characterization
CL: Classification
Processing science
SF: Subfile

Ceramic Abstracts
AN: Accession Number
CA7205339

Record 29 of 129

TI: Title
Ceramic materials for use in insert-casting and processes for producing the same
SO: Source
US Patent 5066626
NT: Notes
Patent date: 19 Nov 1991
AP: Patent Applicant
NGK Insulators, Ltd.
PN: Patent Number
5066626
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
aluminum titanate; glass; casting; production processes
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7105303

Record 30 of 129

TI: Title
Ceramic materials to be insert-cast
SO: Source
US Patent 5055435
NT: Notes
Patent date: 8 Oct 1991
AP: Patent Applicant
NGK Insulators, Ltd.
PN: Patent Number
5055435
LA: Language
English
PY: Publication Year
1991

PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
aluminum titanate; casting; linings
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7105304

Record 31 of 129

TI: Title
Characterization of beta -Al sub 2 TiO sub 5 aged at 1000 degrees C
SO: Source
Materials Science Monographs, 66 [D] 2899-907, 1991
AB: Abstract
Paper reports all experimental data such as mechanical properties, thermal expansion coeffs., thermal shock resistance, etc., and provides a correlation among all the characteristics of the material and decomposition level. (meeting proceedings)
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; aging; decomposition; mechanical properties; thermal properties
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7114697

Record 33 of 129

TI: Title
Fabrication of flaw-tolerant aluminum-titanate-reinforced alumina
AU: Author
Runyan, Julie L; Bennison, Stephen J
SO: Source
Journal of the European Ceramic Society, 7 [2] 93-9, 1991
AB: Abstract

High-density (99% theoretical) composites with controlled microstructures are produced using starting powders of alpha -Al sub 2 O sub 3 and beta -AlTiO sub 3 . Indentation-strength measurements demonstrate flaw tolerance. Strong crack stabilization with prefailure extensions of a millimeter or more exists that gives rise to flaw-tolerance properties and results in pronounced R-curve behavior. Grain-localized crack bridging is active in these materials and may contribute to R-curve properties. 43 refs.
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
composites; aluminum titanate; fracture toughness; r-curve; mechanical properties
CL: Classification
Processing science
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7112244

Record 35 of 129

TI: Title
Flaw-insensitive ceramics
AU: Author
Bennison, Stephen J; Padture, Nitin, P; Runyan, Julie L
SO: Source
Philosophical Magazine Letters, 64 [4] 191-5, 1991
AB: Abstract
Authors propose processing ceramics with crack-impeding elements integrated into the indigenous microstructures, so that any preexisting or service-induced flaws are effectively stabilized. Strength data on a tailored Al sub 2 O sub 3 /AlTiO sub 3 material demonstrate the capacity of this approach to produce simple ceramics with unique flaw insensitivity.
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
composites; alumina; aluminum titanate; flaws; strength
CL: Classification
Processing science

SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7205445

Record 37 of 129

TI: Title
High-resolution electron microscopy study of the cationic disorder in Al sub 2 TiO sub 5
AU: Author
Epicier, T; Thomas, G; Wohlfromm, H
SO: Source
Journal of Materials Research, 6 [1] 138-45, 1991
AB: Abstract
Crystallographic arrangement is studied, especially ordering possibilities of Al and Ti cations in the metallic sublattice.
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; cations; disorder; electron microscopy; crystallography
CL: Classification
Crystal chemistry, thermodynamics, phase
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7213557

Record 38 of 129

TI: Title
Method for producing aluminum titanate
SO: Source
US Patent 5032376
NT: Notes
Patent date: 16 Jul 1991
AP: Patent Applicant
Maschinenfabrik Andritz AG
PN: Patent Number
5032376
LA: Language
English
PY: Publication Year
1991
PT: Publication Type

Patent
PC: Patent Country
US
DE: Descriptors
aluminum titanate; production processes; powders
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7102288

Record 39 of 129

TI: Title
Microstructural characterization of aluminum titanate-based composite materials
AU: Author
Wohlfromm, Hans; Epicier, Thierry; Moya, Jose S
SO: Source
Journal of the European Ceramic Society, 7 [6] 385-96, 1991
AB: Abstract
Authors study Al sub 2 TiO sub 5 , MgO-stabilized Al sub 2 TiO sub 5 , and Al sub 2 TiO sub 5 /mullite/ZrO sub 2 composites, stabilized and unstabilized. HREM shows complete disorder in cationic sublattice of Al sub 2 TiO sub 5 , even in presence of Mg. Analysis of Burgers vectors of dislocations in Al sub 2 TiO sub 5 is presented. EDXS analysis of Al sub 2 TiO sub 5 bulk in MgO-stabilized samples gives direct evidence for formation of solid solution of Al sub 2 sub (sub 1 sub - sub x sub) Mg sub x Ti sub 1 sub + sub x O sub 5 with improved thermal stability. TEM reveals presence of glassy phase in all samples. EDXS analysis of glassy phase shows repartition of Mg between Al sub 2 TiO sub 5 matrix and glass, reducing effectiveness of stabilizing MgO.
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; magnesia; zirconia; microstructure; characterization
CL: Classification
Microstructure and characterization
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7202880

Record 41 of 129

TI: Title
Preparation of aluminum titanate by slip casting
AU: Author
Wohlfromm, Hans; Pena, Pilar; Moya, Jose S
SO: Source
Materials Science Monographs, 66 [B] 1083-94, 1991
AB: Abstract
Zeta potential of Al sub 2 O sub 3 and TiO sub 2 as a function of pH and surfactant content is determined. Aqueous suspensions are prepared. Al sub 2 O sub 3 /TiO sub 2 samples are cast and heat-treated at > 1300 degrees C to obtain Al sub 2 TiO sub 5 . (meeting proceedings)
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; suspensions; zeta potential; slip casting; preparation
CL: Classification
Processing science
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7205574

Record 42 of 129

TI: Title
Preparation of aluminum titanate from an organometallic oligomer
SO: Source
US Patent 5039636
NT: Notes
Patent date: 13 Aug 1991
AP: Patent Applicant
Hercules, Inc.
PN: Patent Number
5039636
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Patent
PC: Patent Country
US

DE: Descriptors
aluminum titanate; organometallic
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7102305

Record 43 of 129

TI: Title
Sinterable pulverulent raw material based on aluminum titanate, a process for its preparation, and the sintered bodies produced therefrom and their use
SO: Source
US Patent 5055434
NT: Notes
Patent date: 8 Oct 1991
AP: Patent Applicant
Bayer AG
PN: Patent Number
5055434
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
aluminum titanate; high temperature; engines; catalysts
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7105347

Record 45 of 129

TI: Title
Thermal stabilization of aluminum titanate and properties of aluminum titanate solid solutions
AU: Author
Tilloca, G
SO: Source
Journal of Materials Science, 26 [10] 2809-14, 1991
AB: Abstract

Thermal stabilization of Al sub 2 TiO sub 5 , without altering its thermal expansion, is considered by partial substitution in the structure compound of Al sup 3 sup + ions by Fe sup 3 sup + ions. Solid solutions show a strong thermal stability and a thermal expansion coeff., especially for the solid solution (x=0.1), which is not far from the Al sub 2 TiO sub 5 value even after annealing for 300 h at 1000 degrees C.
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; solid solutions; stability; thermal expansion; iron
CL: Classification
Physical properties
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7202506

Record 48 of 129

TI: Title
Aluminum titanate ceramics: I, Influence of Al sub 2 O sub 3 on course of synthesis and on Al sub 2 TiO sub 5 microstructure
SO: Source
Sklar a Keramik, 42 [12] 404-8, 1992
AB: Abstract
Article abstract not included.
LA: Language
Czechoslovakian
PY: Publication Year
1992
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; alumina; microstructure; synthesis; scanning electron microscopy [sem]
CL: Classification
Processing science
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7305689

Record 56 of 129

TI: Title
Process for producing sintered material based on aluminum oxide and titanium oxide
SO: Source
US Patent 5076815
NT: Notes
Patent date: 31 Dec 1991
AP: Patent Applicant
Lonza Ltd.
PN: Patent Number
5076815
LA: Language
English
PY: Publication Year
1992
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
alumina; titania; sintering; aluminum titanate; abrasives
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7111691

Record 57 of 129

TI: Title
Sintered ceramic materials based on aluminum titanate, a process for their production, and their use
SO: Source
US Patent 5153153
NT: Notes
Patent date: 6 Oct 1992
AP: Patent Applicant
Bayer AG
PN: Patent Number
5153153
LA: Language
English
PY: Publication Year
1992
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors

aluminum titanate; mullite
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7204889

Record 60 of 129

TI: Title
Al sub 2 TiO sub 5 -Al sub 2 O sub 3 functionally gradient materials obtained by sequential slip casting
AU: Author
Requena, J; Moya, JS; Pena, P
SO: Source
Ceramic Transactions, 34pp. 203-10, 1993
AB: Abstract
Slurries are prepared with 65% solids content and viscosities of 8- 17 MPa center dot s. Morphology of the different reaction-sintered layers depends on the heating cycles. Cracks perpendicular to FGM layers are attributed to the expansive formation of Al sub 2 TiO sub 5 . (meeting proceedings)
LA: Language
English
PY: Publication Year
1993
PT: Publication Type
Journal
DE: Descriptors
functionally gradient materials; aluminum titanate; alumina; slip casting; morphology
CL: Classification
Processing science
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7213852

Record 70 of 129

TI: Title
Synthesis and properties of Al sub 2 TiO sub 5 ceramics
AU: Author
Jambazov, S; Lepkova, D
SO: Source
Third Euro-Ceram., 3, pp. 1013-18, 1993
AB: Abstract
Al sub 2 TiO sub 5 is synthesized using the solid phase method and sol-gel techniques. In addition, thialyte ceramics with the

participation of different additives are also synthesized. The influence of these additives on the process of thialyte formation, its stability, and physicomechanical and thermal properties are verified. (meeting proceedings)
LA: Language
English
PY: Publication Year
1993
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; synthesis; mechanical properties; sol-gel; thermal properties
CL: Classification
Ferroelectrics
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA74064

Record 72 of 129

TI: Title
Use of polyfactor experimental design for creation of a porous structure of ceramic biomaterial based on Al sub 2 TiO sub 5
AU: Author
Spaseska, D; Milosevski, M; Milosevska, R
SO: Source
Third Euro-Ceram., 3, pp. 107-12, 1993
AB: Abstract
High-porosity, controlled pore size, shape and their orientation, as well as good strength and E-modulus, are significant characteristics of a suitable bioceramic system. C fiber bundles, previously infiltrated into the ceramic matrix, are fired out during sintering for the purpose of the creation of a porous structure of bioceramics with defined characteristics. (meeting proceedings)
LA: Language
English
PY: Publication Year
1993
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; porous materials; mechanical properties; carbon fibers
CL: Classification
Nonoxides
SF: Subfile
Ceramic Abstracts

AN: Accession Number
CA7407028

Record 73 of 129

TI: Title
Aluminum titanate ceramic and process for producing the same
SO: Source
US Patent 5346870
NT: Notes
Patent date: 13 Sep 1994
AP: Patent Applicant
NGK Insulators, Ltd.
PN: Patent Number
5346870
PY: Publication Year
1994
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
aluminum titanate; mullite; production processes
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7401248

Record 76 of 129

TI: Title
Ceramics based on aluminum titanate, process for their production, and their use
SO: Source
US Patent 5288672
NT: Notes
Patent date: 22 Feb 1994
AP: Patent Applicant
Bayer AG
PN: Patent Number
5288672
PY: Publication Year
1994
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors

aluminum titanate; mullite; production processes
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7312351

Record 81 of 129

TI: Title
Method of producing self-supporting aluminum titanate composites and products relating thereto
SO: Source
US Patent 5340783
NT: Notes
Patent date: 23 Aug 1994
IN: Inventor
Anderson, Edward N; Johnson, Thomas A
AP: Patent Applicant
Lanxide Technology Co., LP
PN: Patent Number
5340783
PY: Publication Year
1994
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
aluminum titanate; composites
CL: Classification
Nonoxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7401326

Record 82 of 129

TI: Title
Microstructures and mechanical properties of TiO sub 2 -doped alumina ceramics owing to decomposition of formed Al sub 2 TiO sub 5
SO: Source
J. Ceramic Soc. Jpn., 102 [3] 252-7, 1994
AB: Abstract
Al sub 2 TiO sub 5 decomposed into Al sub 2 O sub 3 and TiO sub 2 at 900-1300 degrees C. Al sub 2 O sub 3 powder compacts containing 0-16 wt% TiO sub 2 were sintered at 1500 degrees C for 2 h, then

annealed at 900-1350 degrees in air. Thermal stress existed in the sintered body due to difference in thermal expansion coeff. between Al sub 2 O sub 3 and TiO sub 2 . Bending strength was increased by decomposition of Al sub 2 TiO sub 5 , but toughness was not changed.
LA: Language
Japanese
PY: Publication Year
1994
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; microstructure; decomposition; mechanical properties; dopants/doping
CL: Classification
Microstructure and characterization
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7317173

Record 83 of 129

TI: Title
Overview of the thermal shock characteristics of aluminum titanate
AU: Author
Alecu, I; Stead, RJ; Perera, DS
SO: Source
Int. Ceram. Monogr., 1 [2] 868-73, 1994
AB: Abstract
Title describes article content. (meeting proceedings)
LA: Language
English
PY: Publication Year
1994
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; thermal shock resistance; microstructure; applications
CL: Classification
Deformation, strength, fracture
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7502083

Record 85 of 129

TI: Title

Sinterability of Al sub 2 TiO sub 5 powder synthesized by homogeneous precipitation technique
SO: Source
J. Ceramic Soc. Jpn., 102 [3] 309-11, 1994
AB: Abstract
Calcined powders were sintered at 1350-1500 degrees C for 4 h. Sintered density increased and amount of Al sub 2 TiO sub 5 formed decreased by increasing calcination temp. between 800 degrees and 1000 degrees . In sintering of a powder calcined at 1350 degrees , sintered density and Al sub 2 TiO sub 5 amount increased with increase in sintering temp., resulting in 96% TD and 100% Al sub 2 TiO sub 5 phase by sintering at 1500 degrees .
LA: Language
Japanese
PY: Publication Year
1994
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; powders; sinter/sintering; calciners /calcination; synthesis
CL: Classification
Processing science
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7316990

Record 86 of 129

TI: Title
Synthesis and properties of tialite, beta-Al sub 2 TiO sub 5
AU: Author
Sekar, MMA; Patil, KC
SO: Source
Br. Ceram. Trans., 93 [4] 146-9, 1994
AB: Abstract
Tialite, a low-expansion material, was synthesized by the combustion of corresponding metal nitrates and carbohydrate or urea mixtures at 500 degrees C.
LA: Language
English
PY: Publication Year
1994
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; synthesis; thermal expansion; physical properties
CL: Classification

Processing science
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7501704

Record 87 of 129

TI: Title
Application of aluminum titanate as thermocouple protection tubes in the molten aluminum industry
SO: Source
Ceramic Transactions, 52, pp. 247-54, 1995
AB: Abstract
The mechanical and physical properties of aluminum titanate (AT-80) are evaluated, and theoretical calculations as well as empirical data are presented showing its response time. (meeting proceedings)
LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; thermocouples; mechanical properties; thermal expansion
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7501075

Record 88 of 129

TI: Title
Microwave synthesis of aluminum titanate in air and nitrogen
AU: Author
Mathis, MD; Agrawal, Dinesh K; Roy, Rustum; Plovnick, Ross H; Hutcheon, RM
SO: Source
Ceramic Transactions, 59, pp. 557-64, 1995
AB: Abstract
Microwave-assisted solid-state reaction of Al sub 2 O sub 3 and anatase to form Al sub 2 TiO sub 5 was studied. Al sub 2 TiO sub 5 could be synthesized at 1150 degrees C in air and at 1050 degrees in N sub 2 . Dielectric studies showed a threefold increase in the dielectric constant when processed in N sub 2 as opposed to air, indicating the evolution of defects, and showed that the onset of

the solid-state reaction was enhanced with N sub 2 processing. Anatase was converted to rutile before the Al sub 2 TiO sub 5 reaction occurred, and Al sub 2 TiO sub 5 was synthesized from an Al sub 2 O sub 3 -defect rutile route in N sub 2 . Al sub 2 TiO sub 5 was nucleated at 600 degrees and was about 70% reacted by 900 degrees . (meeting proceedings)
LA: Language
English
PY: Publication Year
1995
PT: Publication Type
Journal
DE: Descriptors
aluminum titanate; synthesis; microwaves; air; nitrogen
CL: Classification
Processing science
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7501583

Record 89 of 129

TI: Title
Sol-gel .beta.-aluminum titanate thin film coating
SO: Source
US Patent 5407479
NT: Notes
Patent date: 18 Apr 1995
IN: Inventor
Sun, Tawei; Brown, Nancy R; Brown, Jesse J, Jr
AP: Patent Applicant
The Center for Innovative Technology; Virginia Polytechnic Institute & State University
PN: Patent Number
5407479
PY: Publication Year
1995
PT: Publication Type
Patent
PC: Patent Country
US
DE: Descriptors
aluminum titanate; thin films; coatings; sol-gel
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7409840

Record 95 of 129

TI: Title
Effects of excess alumina on microstructure of aluminum titanate ceramics made from a mixture of alumina and titania
SO: Source
Yogyo Kyokaishi, 93 [6] 315-21, 1985
LA: Language
Japanese
PY: Publication Year
1985
PT: Publication Type
Journal
DE: Descriptors
chemistry; titanates; structure, micro-
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6608308

Record 96 of 129

TI: Title
Formation and decomposition of aluminum titanate: I, The reaction of formation of aluminum titanate
AU: Author
Hennicke, Hans Walter; Lingenberg, W
SO: Source
CFI, Ceramic Forum International/Berichte der Deutschen Keramischen Gesellschaft, 62 [9-10] 439-45, 1985
AB: Abstract
Thermodynamic calculations show theoretically that Al sub 2 TiO sub 5 forms over the entire temp. range. However, the reaction proceeds at a noticeable rate only at 1260 degrees C. Tialite nuclei occur in samples tempered for 2 h at 1260 degrees . Since the reaction is solid state, it is unlikely that Al sub 2 TiO sub 5 forms below the decomposition zone (800- 1200 degrees), in which tialite breaks down into rutile and corundum. XRD detected a small amount of tialite after 2 h at 1275 degrees ; dilatometry detected an incipient reaction > 1275 degrees . Increased porosity and pronounced grain growth lead to microcrack formation, reducing the mechanical strength of fired Al sub 2 TiO sub 5 .
LA: Language
German | English
PY: Publication Year
1985

PT: Publication Type
Journal
DE: Descriptors
physics; titanates; formation; decomposition
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6606501

Record 98 of 129

TI: Title
Synthesis and thermal stability of aluminum titanate solid solutions
SO: Source
Journal of the American Ceramic Society, 70 [2] 69-71, 1987
AB: Abstract
The authors synthesized solid solutions of Al titanate by adding MgO, ZrO sub 2 , or SiO sub 2 , by reaction sintering, and by annealing in air. Substitution of Si for Al in Al sub 2 TiO sub 5 and of Ti and Mg ions for 2Al formed other solid solutions and effectively controlled thermal decomposition. Substitution of Zr for Ti had little effect.
LA: Language
English
PY: Publication Year
1987
PT: Publication Type
Journal
DE: Descriptors
oxides; solutions, solid; titanates; stability
CL: Classification
Chemistry
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6603180

Record 99 of 129

TI: Title
Correlation between grain size and thermal expansion for aluminum titanate materials
AU: Author
Parker, Fred J; Rice, Roy W
SO: Source
Journal of the American Ceramic Society, 72 [12] 2364-6, 1989

AB: Abstract
An Al sub 2 TiO sub 5 avg grain size of 3- 4 mu m was the min. at which the size and population of microcracks effectively reduced apparent thermal expansion. Further increases in grain size resulted in a rapid drop in the bulk thermal expansion, followed by diminishing decreases with further increases in grain size.
LA: Language
English
PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
titanates; thermal expansion; grain size; microcracking; titanates; expansion
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6901340

Record 100 of 129

TI: Title
Mechanism of technical ceramic strength increase as a result of eutectoid decomposition of aluminum titanate
AU: Author
Zhavoronkov, NM; Shevchenko, VYa; Dabizha, AA
SO: Source
Doklady Akademii Nauk SSSR, 304 [3] 673-5, 1989
AB: Abstract
Ultimate flexural strength and apparent density increase in Al#72O#73-Al#72TiO#73 ceramics with 55#8#.80% Al#72O#73 upon annealing at 1100#+C, due to eutectoid decomposition that increases with the duration of annealing. Results indicate a close-grained structure (rutile) forms.
LA: Language
Russian
PY: Publication Year
1989
PT: Publication Type
Journal
DE: Descriptors
titanates; alumina; flexural strength; decomposition; annealing; titanates; decomposition; strength
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts

AN: Accession Number
CA7001551

Record 102 of 129

TI: Title
Aluminum titanate made in a solar furnace
AU: Author
Azimov, SA; Gulamova, DD; Mel'nik, NN
SO: Source
Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy, 20 [3] 469-71, 1984
AB: Abstract
beta -Al sub 2 TiO sub 5 forms during synthesis of Al sub 2 TiO sub 5 in a melt of TiO sub 2 and Al sub 2 O sub 3 . Study using Raman spectroscopy determined crystal lattice parameters and details of the synthesis process.
LA: Language
Russian
PY: Publication Year
1984
PT: Publication Type
Journal
DE: Descriptors
chemistry; aluminum; furnaces; titanates
CL: Classification
Engineering materials
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6405512

Record 103 of 129

TI: Title
Aluminum titanate formation by solid-state reaction of fine Al sub 2 O sub 3 and TiO sub 2 powders
SO: Source
Journal of the American Ceramic Society, 70 [1] 33-8, 1987
AB: Abstract
The free energy of formation of Al sub 2 TiO sub 5 in equimolar Al sub 2 O sub 3 sub - TiO sub 2 powder mixtures of approximately 1-mu m particle sizes and approximately 99.8 wt% purity is small at approximately 1300 degrees C. Different mechanisms operate depending on the reaction stage--the rapid initial reaction stage is the nucleation-growth of Al sub 2 TiO sub 5 cells in a nonreacting matrix. The final stage is the slow diffusion-controlled elimination of Al sub 2 O sub 3 and TiO sub 2 dispersiods trapped during the growth of the initial Al sub 2 TiO

sub 5 cells. 34 refs.
LA: Language
English
PY: Publication Year
1987
PT: Publication Type
Journal
DE: Descriptors
chemistry; aluminum; powders; reactions
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6602765

Record 107 of 129

TI: Title
Microstructure and bending strength of aluminum titanate ceramic prepared from a mixture of alumina and titania
SO: Source
Yogyo Kyokaishi, 91 [2] 94-101, 1983
AB: Abstract
The bending strength of the specimens was < 140 kgf/cm sup 2 . All bodies consisted of large domains, in which Al titanate grains 3-4 mu m diam. were oriented. Large thermal expansion anisotropy caused severe domain boundary cracks which decreased strength of the fired specimens. Rapid heating or addition of small amounts of synthesized Al titanate powder decreased crack size, increasing mechanical strength. Mechanism of domain structure formation is discussed.
LA: Language
Japanese
PY: Publication Year
1983
PT: Publication Type
Journal
DE: Descriptors
aluminum; strength; structure, micro-
CL: Classification
Electronics
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6304339

Record 108 of 129

TI: Title
Microstructure and mechanical strength of aluminum titanate ceramics prepared from synthesized powders
SO: Source
Yogyo Kyokaishi, 91 [6] 289-97, 1983
AB: Abstract
Fired bodies of Al titanate ceramics, prepared from 3 synthesized powders having several grain sizes, showed domain-free structures. If the titanate grains were > or = 3 mu m, then the bodies had many microcracks on the grain boundaries; if they were < 2.5 mu m, there were few cracks. Bending strength of the fired bodies increased markedly with decrease of the grain size of the titanate, up to a max value of 860 kgf/cm sup 2 . Thermal expansion of these fired bodies at 1000 degrees C was < 0.4%.
LA: Language
Japanese
PY: Publication Year
1983
PT: Publication Type
Journal
DE: Descriptors
electronics; whiteware; aluminum; strength
CL: Classification
Whiteware
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6306649

Record 109 of 129

TI: Title
Crack propagation resistance of aluminum titanate ceramics
SO: Source
International Journal of High Technology Ceramics, 1 [2] 129-37, 1985
AB: Abstract
Specimens fired at 1450 and 1500 degrees C contain grain boundary microcracks which decrease bend strength and Young's modulus. At the propagation of a crack, microcracks deflect and cause crack branching and blunt the crack tip. As a result, work of fracture increases > 2 multiplied by the original value and crack propagation velocity decreases to 1/2000 of that in microcrack-free specimens.
LA: Language
English
PY: Publication Year
1985
PT: Publication Type

Journal
DE: Descriptors
titanates; aluminum; cracks; strength; young's modulus; aluminum; titanates; cracks
CL: Classification
Physics
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6703651

Record 111 of 129

TI: Title
Thermal and mechanical properties of aluminum titanate [AT]-mullite composites: I, Effects of composition
SO: Source
Yogyo Kyokaishi, 94 [9] 970-6, 1986
AB: Abstract
Avg linear thermal expansion coeff. from 100- 1100 degrees C increases slightly with increasing amount of AT to 50 wt%. The degree of thermal expansion hysteresis decreases with decreasing amount of AT. Bending strength of the composites containing 10- 30 wt% AT is highest, decreasing with additional AT.
LA: Language
Japanese
PY: Publication Year
1986
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; mullite; composites; thermomechanical properties; mechanical properties; composites; thermal properties
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6706865

Record 112 of 129

TI: Title
Thermal and mechanical properties of aluminum titanate [AT]-mullite composites: II, Thermal shock resistance
SO: Source
Yogyo Kyokaishi, 94 [11] 1190-2, 1986
AB: Abstract

DELTA T sub / c/ of the AT-mullite, fired at 1520 degrees C for 4 h, remains constant with increasing amount of AT up to 30 wt%. At 50 wt% DELTA T sub / c/ increases, reaching 1050 degrees at 85 wt% AT. The bending strength is approximately 60 MPa.

LA: Language
Japanese

PY: Publication Year
1986

PT: Publication Type
Journal

DE: Descriptors
titanates; aluminum; mullite; composites; thermomechanical properties; mechanical properties; composites; thermal properties

CL: Classification
Oxides

SF: Subfile
Ceramic Abstracts

AN: Accession Number
CA6706866

Record 114 of 129

TI: Title
Grain-boundary microcracking due to thermal expansion anisotropy in aluminum titanate ceramics

SO: Source
Journal of the American Ceramic Society, 70 [8] C184-6, 1987

AB: Abstract
The authors determined microcracking temp. by measuring thermal contraction and expansion, accompanied by acoustic emission. In ceramics cooled at 6 degrees C/min, stress relaxation does not occur below the 1500 degrees sintering temp. The relation between the temp. difference from the sintering to the microcracking temp. and the grain size shows good agreement with the prediction based on the energy criterion of grain-boundary microcracking.

LA: Language
English

PY: Publication Year
1987

PT: Publication Type
Journal

DE: Descriptors
titanates; aluminum; cracking; grain boundaries; anisotropy; titanates; anisotropy; cracking

CL: Classification
Physics

SF: Subfile
Ceramic Abstracts

AN: Accession Number
CA67018

Record 117 of 129

TI: Title
Toughening aluminum titanate refractories
AU: Author
Pandolfelli, Victor C
SO: Source
Ceramica (Sao Paulo), 33 [214] 225-30, 1987
AB: Abstract
Sintering four inorganic additives with Al sub 2 TiO sub 5 takes place at 1350- 1580 degrees C. Measurement of modulus of rupture, thermal shock resistance, pore size distribution, and thermal expansion coeff. shows the influence of these additives on mechanical and thermal shock resistance. Authors also consider the effect of additives on beta -Al sub 2 TiO sub 5 phase stability.
LA: Language
Portugese
PY: Publication Year
1987
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; toughness; refractories; stability; refractories; titanates; strengthening
CL: Classification
Refractories
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6802804

Record 118 of 129

TI: Title
Aluminum titanate formation by solid-state reaction of coarse Al sub 2 O sub 3 and TiO sub 2 powders
AU: Author
Freudenberg, B
SO: Source
Journal of the American Ceramic Society, 71 [1] 22-8, 1988
AB: Abstract
At < or = 1600 K, Al sub 2 TiO sub 5 nucleation is hindered by the strain energy contribution. Metastable layer sequences Al sub 2 TiO sub 5 /TiO sub 2 /Al sub 2 O sub 3 occur during subsequent growth. High Al mobility in TiO sub 2 provides rapid Al transport from the metastable Al sub 2 O sub 3 /TiO sub 2 interface to the TiO sub 2 /Al sub 2 TiO sub 5 front. At > 1700 K the Al sub 2 O

sub 3 /TiO sub 2 interface is rapidly sealed off by Al sub 2 TiO sub 5 formation. Reactant transport across the Al sub 2 TiO sub 5 is slow because of low mobilities in the product phase. 31 refs.
LA: Language
English
PY: Publication Year
1988
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; formation; solid state; powders; titanates; powders; formation
CL: Classification
Chemistry
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6703565

Record 119 of 129

TI: Title
Aluminum titanate powders--characteristics and possible applications.
AU: Author
Rehfeld, Gerhard; Staudt, T; Zografou, C
SO: Source
Ceramic Transactions, 1Bpp: 1100-7, 1988
AB: Abstract
Discussion of powders synthesized by electrofusion covers microstructures of sintered specimens, prepared by different forming methods, and application of powders for thermal coating processes.
LA: Language
English
PY: Publication Year
1988
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; powders; fusion; thermal properties; powders; aluminum; thermal properties
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6803464

Record 120 of 129

TI: Title
Crack healing and bending strength of aluminum titanate ceramics at high temperature
SO: Source
Journal of the American Ceramic Society, 71 [5] C232-3, 1988
AB: Abstract
Bending strength increased from 62 at RT to 280 MPa at 1100 degrees C. Young's modulus also increased to 99 GPa at 1100 degrees . Crack cylinderization at 1000- 1100 degrees markedly increased the mechanical strength. Thermal-hysteresis curves also showed healing of grain-boundary cracks.
LA: Language
English
PY: Publication Year
1988
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; bending; young's modulus; high temperature; titanates; cracks; strength
CL: Classification
Dielectrics
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6706020

Record 121 of 129

TI: Title
Reaction sintering studies on aluminum titanate
AU: Author
Thomas, HAJ
SO: Source
Science of Ceramics 14, pp. 273-8, 1988
AB: Abstract
Title describes article content. (meeting proceedings)
LA: Language
English
PY: Publication Year
1988
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; sintering; microstructure; phases; aluminum; titanates; sintering
CL: Classification
Physics
SF: Subfile

Ceramic Abstracts
AN: Accession Number
CA6805927

Record 122 of 129

TI: Title
Thermal durability of aluminum titanate ceramics prepared from electrofused powders
AU: Author
Zografou, C; Dhupia, GS; Kroenert, W
SO: Source
Science of Ceramics 14, pp. 757-62, 1988
AB: Abstract
Study of sintered bodies subjected to cyclic thermal shock at 750-1400 degrees C for 100 h or annealing at 1100 degrees for 100 h shows the microstructural degradation using SEM, XRD, and X-ray microanalysis.
LA: Language
English
PY: Publication Year
1988
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; thermal shock; annealing; microstructure; titanates; thermal properties; powders
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6805395

Record 123 of 129

TI: Title
Thermal expansion characterization and thermal stability of aluminum titanate
AU: Author
Byrne, WP; Morrell, R; Lawson, J
SO: Source
Science of Ceramics 14, pp. 775-80, 1988
AB: Abstract
Thermal expansion hysteresis becomes significant at > 600 degrees C, and dissociation of Al titanate into its component oxides becomes significant at > 1050 degrees . During prolonged heat treatment, dissociation occurs fastest at 1050- 1100 degrees , causing increases in expansion coeff. and a reduction in dimensions. The degradation is reversible on refiring to high

both MgO and SiO sub 2 . (meeting proceedings)
LA: Language
English
PY: Publication Year
1988
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; thermal expansion; temperature; additives; thermal properties; titanates; expansion
CL: Classification
Oxides
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6805396

Record 124 of 129

TI: Title
Ceramic materials containing aluminum titanate
SO: Source
Great Britain Patent 2203141
NT: Notes
Patent date: 12 Oct 1988
IN: Inventor
Olapinski, DH; Burger, DW; Dworak, DU
AP: Patent Applicant
Feldmuhle AG
PN: Patent Number
2203141
LA: Language
English
PY: Publication Year
1989
PT: Publication Type
Patent
PC: Patent Country
Great Britain
DE: Descriptors
titanates; aluminum; composition; fabrication; titanates; ceramic materials; aluminum
CL: Classification
Ferroelectrics
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA6804851

Record 125 of 129

TI: Title
Effect of the microstructural features on the stability of aluminum titanate
AU: Author
Gulamova, DD; Sarkisova, MKh
SO: Source
Refractories (English Translation), 32 [5-6] 215-18, 1991
AB: Abstract
Article abstract not included.
LA: Language
English
PY: Publication Year
1991
PT: Publication Type
Journal
DE: Descriptors
titanates; aluminum; stability; microstructure; temperature
CL: Classification
Microstructure and characterization
SF: Subfile
Ceramic Abstracts
AN: Accession Number
CA7303139